इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 12667-1 (1989): Methods of chemical analysis of chromite sand, Part 1: Determination of silica [MTD 13: Ores and Raw Materials]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

Indian Standard

CHROMITE SAND FOR FOUNDRIES — METHODS OF CHEMICAL ANALYSIS

PART 1 DETERMINATION OF SILICA

भारतीय मानक

फाउँड्रियों के लिए क्रोमाइट सैंड — रासायनिक विश्लेषण

भाग 1 सिलिका ज्ञात करना

UDC 666·762·43 : 543 [546·284-31] : 621·743·42

© BIS 1989

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 1989

Price Group 1

Methods of Chemical Analysis of Ores, Minerals and Refractories Sectional Committee, SMDC 35

FOREWORD

This Indian Standard (Part 1) was adopted by the Bureau of Indian Standards on 29 March 1989, after the draft finalized by the Methods of Chemical Analysis of Ores, Minerals and Refractories Sectional Committee had been approved by the Structural and Metals Division Council.

IS 6788 : 1973 'Specification for chromite sand for foundries' covers the requirements for various constituents. As chromite sand is widely used in steel/iron castings, a need was felt to prepare the standard on methods of test based on the requirements of IS 6788 : 1973.

This standard has been prepared in different parts. This part (Part 1) covers the chemical analysis of silica, and the other parts are:

Part 2 Determination of iron

Part 3 Determination of chromium

Part 4 Determination of calcium

In reporting the results of test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

CHROMITE SAND FOR FOUNDRIES — METHODS OF CHEMICAL ANALYSIS

PART 1 DETERMINATION OF SILICA

1 SCOPE

1.1 This standard (Part 1) covers a method for determination of silica (as SiO_2) in chromite sand for foundries.

2 REFERENCE

IS No.	*Title*
IS 1811 : 1984	Methods of sampling foundry sand (*first revision*)

3 SAMPLING

3.1 The sample shall be drawn by the method prescribed in IS 1811 : 1984.

3.2 Pulverize about 10 g of sample in an agate mortar to pass through 75 µm IS test sieve. Dry at 105 to 110°C for 2 hours.

4 GENERAL

4.1 Use of Filter Papers

In this method, only relative number of Whatman filter papers has been prescribed since they are commonly used. However, any other suitable brand of filter paper of corresponding porosity and equivalent quality may also be used.

5 QUALITY OF REAGENTS

5.1 Unless specified otherwise, analytical grade reagents and distilled water shall be employed in the test.

6 DETERMINATION OF SILICA BY THE GRAVIMETRIC METHOD

6.1 Out line of the Method

Sample is decomposed with sodium peroxide and treated with dilute hydrochloric acid and baked. Silica is determined by usual hydrofluorization method.

6.2 Reagents

6.2.1 *Sodium Peroxide,* granular

6.2.2 *Dilute Hydrochloric Acid,* 1 : 1 (*v/v*).

6.2.3 *Silver Nitrate Solution,* 2 percent (*m/v*).

6.2.4 *Dilute Hydrochloric Acid,* 1 percent (*v/v*).

6.2.5 *Dilute Sulphuric Acid,* 1 : 3 (*v/v*).

6.2.6 *Hydrofluoric Acid (HF),* 40 percent.

6.3 Procedure

6.3.1 Weigh 0·500 g of sample (*see* **3.2**) and mix with 4 g of sodium peroxide in a nickel crucible. Heat the crucible covered with lid over a flame till the mass begins to melt. Rotate the crucible, hold it with a pair of tongs gently over the flame till the fusion is complete. Remove the crucible from the flame and allow to cool

6.3.2 Dissolve the fused mass in 25 ml of dilute hydrochloric acid in a porcelain basin. Wash the crucible with water, evaporate the solution on a bath till there is no smell of hydrochloric acid and finally bake it in an oven at 110°C. Cool and add dilute hydrochloric acid to dissolve the residue other than silica. Filter the solution through Whatman filter paper (No. 42). Wash with hot dilute hydrochloric acid and then with hot water till free from chloride (confirm with 0·2 percent silver nitrate solution). Take the residue along with the filter paper in a tared platinum crucible. Dry, char and ignite at 900°C to constant mass and weigh.

6.3.3 Add 0·5 to 1 ml of dilute sulphuric acid to the residue in the platinum crucible, and 5 to 10 ml of hydrofluoric acid. Evaporate the contents on a sand bath till fumes of sulphur trioxide (SO_3) are given off. Heat the crucible strongly and ignite to a constant mass at 900°C.

6.3.4 Carry out a blank determination following the above procedure using the same quantity of all reagents with the sample.

6.4 Calculation

$$\text{Silica (as SiO}_2\text{), percent} = \frac{(A-B)-C}{D} \times 100$$

where

A = mass in g of platinum crucible with residue before hydrofluorization,

B = mass in g of crucible with residue obtained after repeated hydrofluorization with HF,

C = mass in g of silica obtained from the blank determination, and

D = mass in g of sample taken.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No. SMDC 35 (2875)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75
Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	331 01 31 331 13 75
Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola CALCUTTA 700054	36 24 99
Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036	2 18 43 3 16 41
Southern : C.I.T. Campus, IV Cross Road, MADRAS 600113	41 24 42 41 25 19 41 29 16
Western : Manakalaya, E9 MIDC, Marol, Andheri (East) BOMBAY 400093	6 32 92 95

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR.
GUWAHATI. HYDERABAD. JAIPUR. KANPUR. PATNA.
TRIVANDRUM.

Printed at Arcee Press, New Delhi, India